NBII Wildlife Disease Information Node

The node provides information on wildlife health and wildlife-human-domestic animal disease interactions.

Background

The National Biological Information Infrastructure (NBII) <www.nbii.gov> is an electronic information network that provides access to biological data and information on our nation's plants, animals, and ecosystems. Data and information maintained by federal, state, and local government agencies; non-government organizations; and private-sector organizations are linked through the NBII gateway and made accessible to a variety of audiences including researchers, natural resource managers, decision-makers, educators, students, and other private citizens.

Implementation of the NBII is being accomplished through the development of nodes that serve as entry points to the NBII and the information held by partners. The NBII Wildlife Disease Information Node (WDIN) addresses the need for information on a variety of wildlife diseases and their implications, including those affecting wildlife, domestic animals, and humans. WDIN operations are managed through the cooperation of its major partners: the USGS National Wildlife Health Center, and the Gaylord Nelson Institute for Environmental Studies at the University of Wisconsin-Madison.

Wildlife Diseases: An Increasing Concern

Infectious and zoonotic (transmitted between animals and man) diseases of wildlife have long been recognized as having the potential to affect wildlife, domestic animal, and human health. Interest in wildlife diseases has increased recently for a number of reasons:

▲ *1973 outbreak of duck plague at Lake Andes National Wildlife Refuge in South Dakota, resulting in the death of over 40,000 mallards.* Photo credit: Milton Friend

▼ *Post-mortem examination of an American crow for West Nile Virus.*

Photo credit: USGS NWHC staff

- Disease is being recognized as a potentially limiting factor affecting wildlife populations.
- Wildlife habitat is decreasing in acreage through modification and destruction, resulting in increased animal densities with increased associated risks of pathogen transmission.
- Wildlife may act as potential reservoirs or amplifiers of disease.
- Human encroachment into wildlife habitat is leading to increased wildlife-human-domestic animal interactions and creating new opportunities for zoonotic disease transmission.
- Scientists are discovering emerging and re-emerging diseases in both traditional and new geographic locations.
- Wildlife diseases are moving around the globe with the increasing speed and intensity of international trade of animal species, creating new opportunities for the rapid spread of disease.
- There are potential economic impacts of wildlife diseases on human society. Limitations on wildlife re-population and re-introduction programs are being placed due to health concerns for wildlife, domestic animal, and human populations.
- Wildlife can be used as indicators and sentinels for potential human and domestic animal health threats.

WDIN Objectives

Building partnerships and providing tools to facilitate long-term collaborative efforts in the wildlife disease arena are being pursued to support the following major WDIN objectives:

- Facilitate access to data and information on wildlife and zoonotic diseases;
- Visualize clusters on morbidity and mortality events;
- Track the prevalence and spread of various diseases at the most discrete spatial and temporal levels through interactive GIS mapping and other applications;
- Predict possible new disease appearances;
- Identify previously unrecognized wildlife-human-domestic animal disease relationships;
- Help limit further disease spread; and
- Help prevent future outbreaks.

The WDIN Approach

As in many disciplines, data and information on wildlife diseases exist in many formats and locations, with minimal linkages among

major resources. Likewise, the interdisciplinary relationships with human and domestic animal health further extends the net that must be cast to capture the knowledge needed to effectively manage wildlife health activities and programs. WDIN works to address these efforts by creating tools, systems, and products that help connect the wildlife health community, and offer dynamic mechanisms for data sharing. With the assistance of partners, this will be accomplished through two functional areas:

WDIN Resource Gateway

One function of WDIN is to provide a gateway to wildlife disease resources through its dynamically driven Web site. New content is routinely added and organized to facilitate quick, definitive searches or leisurely browsing.

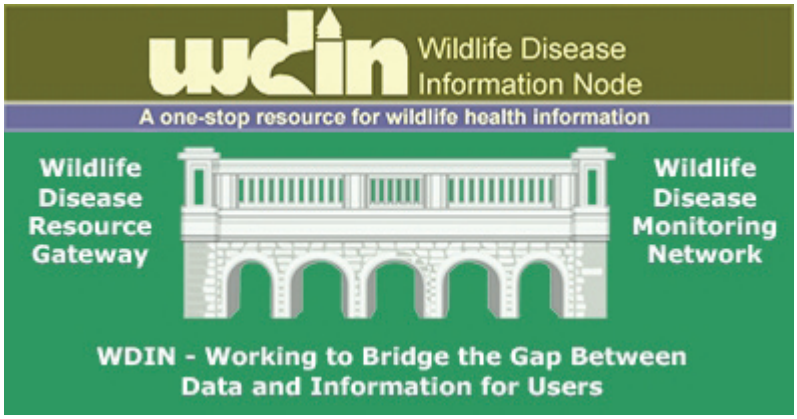
In addition to the growing collection of general wildlife health resources, a number of diverse resources have been added for specific diseases, such as West Nile virus, chronic wasting disease, avian influenza, and avian botulism.

Useful Tools

WDIN has developed a number of tools to help the wildlife health community connect and stay up-to-date on current events related to wildlife disease. Almost daily, WDIN brings together national and international wildlife disease news in its publication, the *Wildlife Disease News Digest*. Members can also subscribe to WDIN RSS feeds, and learn at once about newly added web content to WDIN. Another subscription service offered is the WildlifeHealth Listserv. It provides a platform for general discussion and news exchange about wildlife health and disease ecology. As a way to help remind members about upcoming meetings and conferences, WDIN has designed a searchable events calendar. Lastly, WDIN publishes a monthly bulletin, *WDIN Highlights*, that showcases for readers WDIN products, functions, and resources.

WDIN - Wildlife Health Monitoring Network(WHMN)

Another function of WDIN is to offer data management tools and services for wildlife disease surveillance data. Few wildlife disease databases



An illustration of a primary goal of WDIN

exist on national or international scales. Further, no central database or information system exists for common access to geospatial and temporal wildlife disease information, which can hamper rapid disease identification, notification, response, and information dissemination. To easily link or consolidate databases requires the use of standardized vocabularies and categories. These are incorporated into the data management/surveillance systems created by WDIN, as well as encouraged to be used in systems developed by other institutions. When these systems can efficiently interact and exchange comparable data, then a broader picture of wildlife disease occurrence on a national and international scale can be achieved. The following are examples of current WDIN projects toward this goal:

WISDOM

WDIN has partnered with the Wildlife Conservation Society to develop a database architecture that will serve as a framework for different wildlife health surveillance systems including WHMN. This architectural foundation is WISDOM, the Wildlife Information System for Disease Observation and Monitoring. Because of its required fields and standards, the WISDOM architectural schema will ensure that data from partners–with or without their own local wildlife health systems–are correctly formatted for exchanging data between applications or integrating data specifically with WHMN.

Access most of WDIN useful tools at the "Get News" Web page, <http://wildlifedisease.nbii.gov/getnews.html>. The event calendar can be found at <http://wildlifedisease.nbii.gov/wdincalendar.html>.

HEDDS

Collaborating with many different organizations, WDIN has developed a system to manage animal and specimen collection data for avian influenza (AI) taken by many groups and individuals, and analyzed by multiple laboratories. This system, the Highly Pathogenic Avian Influenza Early Detection Data System (HEDDS) <http://wildlifedisease.nbii.gov/ai>, provides scientists with a surveillance tool to monitor and respond to AI threats. HEDDS also functions as a communication tool, informing an interested public about current and past surveillance efforts.

For More Information

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